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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,267

06/23/2006

Ryoichi Okuyama

KPO-001

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01/26/2010

KANESAKA BERNER AND PARTNERS LLP

1700 DIAGONAL RD

SUITE 310

ALEXANDRIA, VA 22314-2848

EXAMINER

WIESE, NOAH S

ART UNIT

PAPER NUMBER

1793

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,267	<b>Applicant(s)</b> OKUYAMA ET AL.	
	<b>Examiner</b> NOAH S. WIESE	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-14, 16, 21-23, 27, 28, 32, 33, 39, 40, 43, 47, 52, 55 and 58-77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10, 12, 16, 21-23, 27, 28, 32, 33, 39, 40, 43, 47, 52 and 55 is/are allowed.
- 6) ☒ Claim(s) 13, 14 and 58-77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/06/2009 has been entered.

### ***Status of Application***

2. Acknowledgement is made of the amendments filed 11/06/2009. Upon entering the amendments, the claims 11, 15, and 17-20 are cancelled, claims 58-77 are added, and claims 12-14, 16, 21-23, 27-28, 32, 39, 43, 47, 52, and 55 are amended. The claims 1-10, 12-14, 16, 21-23, 27-28, 32-33, 39-40, 43, 47, 52, 55, and 58-77 are pending and presented for the examination.

### ***Claim Rejections - 35 USC § 102***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 13-14, 58-66, and 68-76 are rejected under 35 U.S.C. 102(e) as being anticipated by Cropley et al (US 6811905).

Regarding **claims 13-14**, Cropley et al teaches a methanol fuel cell that can be used in an alternative method to produce hydrogen. The fuel cell comprises a partition

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membrane with electrodes on opposing sides, wherein a methanol and water fuel mixture is introduced to one electrode and oxygen is introduced to the opposing electrode. Cropley also teaches a means for supplying an oxidizing agent and fuel containing an organic compound to opposite electrodes. Cropley teaches that there is a means for collecting (discharging) methanol, water, and carbon dioxide (see column 7, lines 25-35). This means is located at the anode (fuel electrode) side of the fuel cell and thus would be capable of collecting hydrogen if it was generated on this electrode. Therefore, it is a functionally equivalent means to that of the instant claim.

The hydrogen generating system taught by Cropley et al meets all of the structural limitations of instant claims 13-14, and therefore anticipates the claims. The designation of the amended claim that one of the configurations in which the system can operate is an open circuit configuration wherein no current is supplied to either electrode is an intended use limitation. Whether current or not current is supplied to either electrode is a function of the process in which the claimed system is being used; it is not, therefore, a structural limitation that can be used to define a product claim. The system taught by Cropley could indeed have all of the needed connections for supplying current to the electrodes, but would still meet all of the patentably weighted limitations of the instant claims because the state of use of the instantly claimed system cannot be used in distinguishing the claims. For instance, the Cropley system (that meets all of the product limitations of the instant claims) would also meet the requirement that no current is supplied to either electrode when the system is off and not in use.

Similarly, the voltage between the electrodes in a generating system is a function of the use of said system and does not relate to the structure of the system. As such, the method of use limitations regarding the voltage between the electrodes do not hold patentable weight in the product claims, and as stated above, claims 13-14 are anticipated by Cropley.

Regarding **claims 58-61 and 68-71**, the limitations regarding varying of certain parameters during the use of the hydrogen generating system are process limitations. They therefore do not hold patentable weight in the product claims 58-61 and 68-71. As such, the claims do not further limit claims 13-14 and so they are anticipated by Cropley, which teaches a structurally equivalent system.

Regarding **claims 62 and 72**, the limitations regarding the operation temperature of the system are process limitations. They therefore do not hold patentable weight in the product claims 62 and 72. As such, the claims do not further limit claims 13-14, and so they are anticipated by Cropley, which teaches a structurally equivalent system.

Regarding **claims 63 and 73**, Cropley teaches that the membrane is a proton conducting solid electrolyte membrane (see claim 1), and preferably, a perfluorosulfonic acid membrane (see column 10, lines 40-43).

Regarding **claims 64 and 74**, Cropley teaches that the anode (fuel electrode) comprises a platinum-ruthenium film (see column 4, lines 20-23). The film can be dispersed a support such as carbon (see column 8, lines 57-62).

Regarding **claims 65 and 75**, Cropley teaches that the cathode (oxidizing electrode) comprises a platinum film that can be supported on carbon powder (see column 4, lines 24-25 and column 8, lines 57-62).

Regarding **claims 66 and 76**, Cropley teaches that liquid fuel (a mixture of organic compound and water) is circulated for cooling of the cell, indicating a means for circulating fuel (see column 11, lines 41-42).

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 67 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cropley et al (US 6811905) in view of Quang et al (US 4840783).

Regarding **claims 67 and 77**, the claim differs from Cropley et al because Cropley does not teach a carbon dioxide absorbing portion for removing carbon dioxide from the produced hydrogen gas. However, it would have been obvious to modify Cropley in view of Quang et al in order to add such an absorbing portion to the system because Quang teaches a method of producing hydrogen from methanol involving an advantageous carbon dioxide absorbing portion (see claim 18). One of ordinary skill would have been motivated to include such an absorbing portion because doing so would result in a product gas produced by the Cropley system having a higher hydrogen purity. One would have expected reasonable success in the modification because Cropley teaches that hydrogen can be produced from the inventive system and Quang teaches a method for removing carbon dioxide from such produced hydrogen-

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containing gas. Therefore, claims 67 and 77 are obvious and not patentably distinct over the prior art of record.

### ***Allowable Subject Matter***

7. Claims 1-10, 12, 16, 21-23, 27-28, 32-33, 39-40, 43, 47, 52, and 55 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art of record, either alone or in combination, fails to anticipate or render obvious the instantly claimed method of producing hydrogen wherein fuel and oxidizing agent are introduced at two electrodes at opposite sides of a membrane, and wherein the hydrogen gas is generated at the fuel electrode (the anode). The prior art also fails to teach or suggest a hydrogen generating system having the configuration of instant claim 12 and its dependent claims, wherein neither electrode is connected to a means for withdrawing or providing electrical energy.

### ***Response to Arguments***

8. Applicant's arguments filed 11/06/2009 have been fully considered but are not persuasive. Applicant argues that the instant claims are distinct over the previously applied prior art by Cropley et al because Cropley teaches that H<sub>2</sub> gas is produced at the oxidizing electrode rather than at the fuel electrode, and further because Cropley does not teach that the voltage between the electrodes is adjusted to within certain parameters. However, as discussed above in the rejections, these are differences in **use** of the fuel cell system and not differences in the system itself. As the rejected claims are drawn to a product and not a method of use, these limitations do not hold

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patentable weight in distinguishing the claims. The fuel cell system taught by Cropley is structurally equivalent to that claimed. Therefore, arguments regarding the differences in **use** of the equivalent product are not persuasive at showing the distinctness of the **product** claims. As such, the previously issued grounds of rejection are maintained for instant claims 13-14 and for new claims 58-77, being based on cancelled claims previously rejected over Cropley.

### ***Conclusion***

9. Claims 1-10, 12, 16, 21-23, 27-28, 32-33, 39-40, 43, 47, 52, and 55 are allowed and claims 13-14 and 58-77 are rejected.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Noah S. Wiese whose telephone number is 571-270-3596. The examiner can normally be reached on Monday-Friday, 7:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a



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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Noah Wiese  
20 January 2010  
AU 1793

/Karl E Group/  
Primary Examiner, Art Unit 1793